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**January 11, 2008** Volume 30 Number 2 www.processor.com



## The Future Of Networking & Connectivity

**Data Centers Will Be Expected To Do** More While Consuming Less Energy

by Bruce Gain

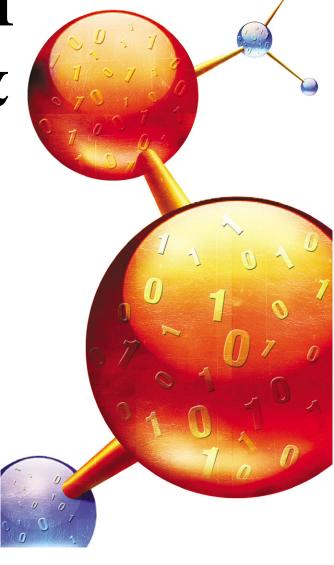
THE IT FIELD, like almost any technology sector, will continue to change and evolve over time. However, one trend will hold true in the foreseeable future: The quantity of information data centers will have to handle and the requisite computing power to handle it should rapidly increase.

"In general terms, networking and connectivity become increasingly important in data center design because all existing and new applications are more bandwidth-hungry than their predecessors," says Michael O'Neil, an independent IT consultant and cofounder and CEO of the social media site IT in Canada (www.itin canada.ca).

#### No Data Center Is An Island

The days when SME data centers were standalone entities that merely housed the email servers and centralized data records are rapidly coming to an end, as well. Users are increasingly connected with multimedia-rich Web sites and expect virtually instant access to bandwidth-intensive content.

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## Cloud Computing: Rent, Don't Buy

#### **New Services Make Expanded Resources** More Accessible For SMEs

by David Geer

SMEs NEED VAST computing resources in order to test Web applications, to complete intense IT-related work, or to serve millions of customers in online sales efforts. Traditionally, SMEs come by these resources through much time and effort and at great expense by building it out and managing it themselves.

Today, SMEs can break tradition and avoid expensive build-outs by using a metered service called cloud computing, which allows them to rent the power of distributed computing as they need it, using it like a service.

#### **Demystifying The Cloud**

Cloud computing earned its name because it delivers applications from "somewhere out there in that big cloud called the Internet." SMEs don't know which part of the Internet the service is coming from, and they don't care, so long as they get what they are paying for, according to Amin Vahdat, director of the University of California at San Diego Center for Networked Systems.

When companies offer cloud computing as a service, SMEs can buy that service like a utility and see the same benefits.

Cloud computing uses virtual servers across the Internet to host and manage applications, according to Vahdat. Advantages include higher utilization of available computer processing power and more efficient and robust application performance. When companies offer cloud computing as a service, SMEs can buy that service like a utility and see the same benefits.

The service comes from companies such as Amazon.com and Terremark Worldwide (www.terremark.com) that have lots of computers spread all over the Internet. Some companies, such as Amazon.com, already have distributed infrastructure they can further monetize by selling off idle compute cycles. Others, such as Terremark, go into business specifically to offer compute cycles for profit, so they can run an SME's applications for it. The fact that this is the SME's application is important to the understanding of cloud computing.

Some people confuse cloud computing with SaaS (Software as a Service). "Cloud computing lets you offer your own Go to Page 10

#### In This ISSUE

#### **COVER FOCUS**

#### **Next-Generation Data Centers**

What will future data centers look like in terms of servers, networking and connectivity, automation, and power and cooling? We talked with product manufacturers and other industry insiders to find out.

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#### **TECH & TRENDS**

#### Cloud Computing | 1

Cloud computing earned its name because it delivers applications from "somewhere out there in that big cloud called the Internet." SMEs don't know which part of the Internet the service is coming from, and they don't care, so long as they get what they are paying for.

#### **Data Center Thermostat Settings** | 19

Spurred by rising energy costs, many enterprises have considered raising the baseline temperature, or set point, inside their data centers. While there's no denying that thermostat settings can impact equipment performance, deciding just what a set point should be is hardly a straightforward issue.

#### Choosing A Web Host | 21

When it comes to choosing a Web hosting company, what are the key issues you need to look for? Is it better to find a local host or one with a nationwide presence? What, exactly, is the best way to go?

#### Security Investments For 2008 | 22

A 2007 survey conducted by Astaro Internet Security found that more than 65% of respondents are planning purchases of sophisticated technologies routinely found in larger enterprises' IT infrastructure.

#### Product Releases | 14

■ AXIOMTEK released the ETM830 and ETM820, two ETX 3.0-compliant CPU modules.

**■ Computer Peripheral Systems** has

revamped its ARR and CPS power strips and introduced the ARR+. ■ EMC announced Managed Availability Services designed to help customers manage, measure, and improve business continuity programs. ■ Enhance Technology has unveiled the UltraStor RS16 IP-4, a 3U 16-drive Quad GbE iSCSI enterprise-grade independent RAID storage system. ■ IBM has introduced IOPES (IBM OmniFind Personal Email Search). ■ McAfee has introduced GroupShield 7 for Microsoft Exchange and GroupShield 7 for Lotus Domino.

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NOVEMBER 16, 2007

NOVEMBER 30, 2007

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PHYSICAL INFRASTRUCTURE

Остовек 26, 2007

### A Master Enterprise View

New ATEN KVM Bundle Provides Perfect Features For Monitoring & Maintaining Servers & PCs

TODAY'S DATA CENTERS require convenient, space-saving, streamlined KVM equipment. ATEN'S 17" Single-Rail LCD Integrated Console and MasterView KVM bundle is designed with those needs in mind.

ATEN's economy LCD KVM console, CL1000M, integrates a keyboard, 17-inch LCD, and touchpad in a 1U Slideaway housing. Setup is fast and easy. There is no software to configure, no installation routines, and no incompatibility problems. Slide the console module section out and flip up the cover, and you are ready to work.

When finished, flip down the cover and slide the console module back into the rack.

By using the CL1000M to manage your installation, you save space; eliminate the expense of having to purchase a separate keyboard, monitor, and mouse for each PC if attaching to a KVM switch; and can take advantage of upgrading your current system

ATEN is now bundling the CL1000M with an eight-port MasterView Plus, which helps reduce the need for redundant hardware. With the MasterView Plus, you can control up to 512 computers with a single keyboard, monitor, and mouse. And it requires no software.

MasterView Plus is more than a simple eight-port KVM switch. A built-in Auto-Scan mode lets you monitor every attached computer for a specified amount of time, while the on-screen display lets you assign a

> unique name to each computer and access it via a slick, menu-driven interface. A Quick View Scan feature makes it easy to monitor selected PCs, and hot-pluggable



capabilities mean you can add or remove PCs for maintenance without powering down the switch. The MasterView's 1U, 19-inch rack-mountable casing and status-monitoring LEDs make it ideal for server rooms or other multicomputer environments.

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#### **NEWS**



#### Solid Information Technology

IN A DEAL EXPECTED to close during the first quarter of this year, IBM has agreed to acquire high-performance database maker Solid Information Technology. The terms of the deal have not been made public, but IBM expects the acquisition to help it enhance its database lineup. Solid, which is a close partner of IBM rival MySQL, is the maker of an embedded database with in-memory database engine, enabling its products to store and retrieve data from main memory. The acquisition was the 12th for IBM last year.

#### RIM Beats Expectations In Q3

THIRD-QUARTER PROFITS for Research In Motion, maker of the popular BlackBerry, beat expectations, despite the fact that its subscription outlook didn't reach analyst predictions. During Q3, RIM had earnings of \$370.5 million, or 65 cents a share, which was more than double the company's profits during the same quarter last year of \$175.2 million, or 31 cents a share. Revenue for the quarter was \$1.67 billion, which was up from \$835.1 million during the same period a year ago. The company continues to diversify its client base, with nonenterprise customers making up 24% of its subscriber base at the end of the third quarter.

#### EMC To Acquire Document Sciences

IN A MOVE TO enable it to broaden its offerings into the transactional content management arena, EMC will pay \$85 million cash for Document Sciences, which provides document output management software. The two companies have been working together since Document Sciences integrated its xPression software with EMC's Documentum platform in 2004. Once the acquisition is complete, EMC will merge Document Sciences into its content management and archiving sector. The boards of directors of both firms have approved the purchase, slated to close by the end of March, but regulatory officials and Document Sciences' shareholders have yet to approve it.

#### Mac Reaches 8% Share In Last Two Days Of 2007

A BOOST IN after-Christmas sales pushed

According to Net Applications, which monitors 40,000 Web sites, Mac recorded market share of 7.3% for the month of December, up from 6.8% in November. At the beginning of 2007, Mac OS X-powered computers accounted for 5.7% of the market; the growth rate for the year totaled about 28%. In the operating system market, Microsoft Windows still led by a large margin with 91.8% in December, which was lower than its 92.4% share in November.

#### AT&T & Vonage Settle Patent Suit

THE MOST RECENT patent infringement lawsuit against VoIP provider Vonage has been settled, according to the company. AT&T filed the lawsuit Oct. 17 and claimed that Vonage willfully infringed on a patent AT&T owned. The patent involved technology that enables people to make VoIP calls using standard telephone equipment. On Nov. 17, the companies announced that they had reached a tentative settlement, with Vonage agreeing to pay AT&T \$39 million; however, terms of the final agreement were not disclosed. Vonage has also settled patent infringement lawsuits with Verizon and Sprint Nextel.

#### McAfee Corrects Previous **Stock Option Errors**

CONCLUDING AN 18-month-long process, McAfee announced it has fixed the errors it had in its past stock option-granting practices and now has up-to-date financial restatements for the entire year of 2006 and the first three quarters of last year. The Securities and Exchange Commission had required the company to complete the corrections in certain filings, which included the 2006 10-K form and 10-Q reports for Q2 and Q3 of 2006 and first three quarters of 2007. Now that McAfee has made the corrections, it will no longer be subject to the restrictions that barred employees from accessing and benefiting from company stock options.

#### Google Toolbar Faces Patent Infringement Charges

WHILE A U.S. COURT of appeals has ruled that Google's AdSense does not infringe on any patents owned by Hyperphrase Technologies, Google's browser toolbar is still in question. The lawsuit, which was filed in April 2006, alleges that Google's AdSense and the AutoLink toolbar feature infringe on four Hyperphrase patents. In a summary judgment, the U.S. District Court for the Western District of Wisconsin rejected the allegations. However, after Hyperphrase filed an appeal, the U.S. Court of Appeals for the Federal Circuit overturned part of the judgment dealing with

AutoLink, sending the case back to the district court for re-examination.

#### 20% Of Windows Apps Missing Patches

ACCORDING TO information Secunia APS gathered, more than 20% of applications installed on Windows computers have missing security patches. Secunia based the figure on information collected from scans of more than 14.5 million Windows applications after users downloaded the company's PSI (Personal Software Inspector) program. The downloadable utility scans a computer for more than 4,200 applications, reporting on the status of relevant security patches. According to the company, 191,000 users have downloaded the utility, which was offered as a free beta starting a year ago but was recently updated to Release Candidate 1 stage.

#### AOL Pulls Plug On Netscape Navigator

AFTER BEING A presence in the Internet browser market since 1994, Netscape Navigator will be discontinued. AOL, which bought Netscape in 1998, will stop development for the browser and also stop issuing security updates for it as of Feb. 1. AOL is encouraging Netscape users to switch to Mozilla Firefox instead. Netscape Navigator previously enjoyed widespread success and large market share in the browser market when it was first introduced, but Microsoft's Internet Explorer became a major competitor and subsequently surpassed Netscape Navigator as the leading Web browser. Internet metrics firm Net Applications reported that Netscape held only 0.6% of the browser market last month.

#### Survey: Chipmakers Will See Slower Growth

ACCORDING TO a study KPMG recently released, a growing number of semiconductor vendors are expecting to see revenue growth slow down. The survey included 94 executives from companies that are part of the top 100 chipmakers worldwide. Included in the things that will hurt chipmakers in the upcoming years are declining chip prices, competition from companies in emerging markets, and development costs. Among those surveyed, 33% of the executives said they expected profits to be flat during the next five years, while 15% said they will decline, and 26% said profits will be volatile and unpredictable.

#### Possible Partnership On The Way For Google & Japan's DoCoMo

REUTERS RECENTLY reported that Google and NTT DoCoMo, a Japanese mobile phone carrier, are considering forming a partnership. The deal would provide DoCo-Mo customers with Google search capabilities and give Google access to DoCoMo's 48 million-user "i-Mode" mobile network. Through a partnership, both companies could potentially benefit with increased exposure in the Japanese market. DoCoMo has experienced difficulties growing, while Google trails Yahoo! Japan in the region's search engine market.

#### Holiday Online Sales Strong **But Show Slower Growth**

**DESPITE STRONG** holiday ecommerce sales, the online sales industry experienced slower growth last year than in previous years. The 2007 holiday season saw 19% growth, while previous years have seen growth rates ranging from 25 to 30%. According to analysts, the decline is the result of changes in consumer habits. Projections from market research firm comScore estimate online holiday spending by American consumers at \$29.5 billion. Overall growth in Internet sales is projected to be 18% for 2007, compared to 25% in recent years, according to Shop.org.

#### **Upcoming** IT Events

#### - JANUARY -

Florida Educational **Technology Conference** January 22-25 Orlando, Fla. www.fetc.org

#### WCA International Symposium

& Business Expo January 29-Feb. 1 San Jose, Calif. www.wcai.com

#### - FEBRUARY -

SCALE 6x - 2008 Southern California Linux Expo February 8-10 Los Angeles, Calif.

#### Comptel Plus Spring 2008 Convention & Expo

www.socallinuxexpo.org

February 24-27 Nashville, Tenn. www.comptel.org

#### - MARCH -

Gartner Wireless & Mobile Summit March 3-5 Chicago, III.

www.gartner.com/it/summits/ra11/index.jsp

#### Secure IT Conference

March 4-6 San Diego, Calif. www.secureitconf.com

#### Help Desk Institute Conference

March 9-12 Dallas, Texas www.thinkhdi.com/hdi2008 . . . . .

VoiceCon March 17-20 Orlando, Fla. www.voicecon.com

#### Boston SecureWorld Expo

March 26-27 Boston, Mass. www.secureworldexpo.com

#### Data Center World

March 30-April 3 Las Vegas, Nev. www.afcom.com

#### - APRIL -

**FOSE** April 1-3 Washington, D.C. www.fose.com

Gartner Business Intelligence Summit

April 1-3 Chicago, III.

www.gartner.com/it/summits/bi6/index.jsp

#### **RSA Conference**

April 7-11

San Francisco, Calif. www.rsaconference.com/2008/US/home.aspx

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Apple's Mac market share to 8.01% for Dec. 30 and 31, a new high for the company.

This information provides a quick glimpse of current and historical stock prices and trends for 15 major companies in the technology market.

Company	Symbol	Year Ago	Dec. 21 \$	Jan. 2 \$	% change from previous week
BEA Systems	BEAS	\$12.82	\$15.95	\$15.55	▼ 2.51%
Computer Associates	CA	\$24.39	\$25.72	\$24.55	<b>▼</b> 4.55%
Cisco Systems	CSCO	\$28.63	\$28.60	\$26.54	▼ 7.2%
Dell	DELL	\$26.17	\$24.88	\$24.39	▼ 1.97%
Electronic Data Systems	EDS	\$26.81	\$21.17	\$19.93	▼ 5.86%
Google	GOOG	\$483.58	\$696.69	\$685.19	<b>▼</b> 1.65%
HP	HPQ	\$41.97	\$52.03	\$49.65	<b>▼</b> 4.57%
IBM	IBM	\$98.90	\$111.05	\$104.69	▼ 5.73%
Intel	INTC	\$21.01	\$26.96	\$25.35	▼ 5.97%
McAfee	MFE	\$29.63	\$38.12	\$35.79	▼ 6.11%
Microsoft	MSFT	\$29.93	\$36.06	\$35.22	<b>▼</b> 2.33%
Oracle	ORCL	\$17.86	\$22.71	\$22.49	▼ 0.97%
Red Hat Software	RHT	\$22.34	\$20.71	\$20.60	▼ 0.53%
Sun Microsystems	JAVAD	\$5.65	\$18.79	\$17.42	▼ 7.29%
Symantec	SYMC	\$21.38	\$16.85	\$16.06	<b>▼</b> 4.69%

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#### **SIX QUICK TIPS**

## Implement Techniques To Improve Drive Performance

by Joe Rudich

MANY FACTORS PLAY a role in the performance of a computer, whether it is a server, workstation, or larger system. Processing power is measured in gigahertz, memory in gigabytes, and network bandwidth in gigabits per second. One aspect not as frequently measured is hard drive speed. Some experts consider disk performance an overlooked aspect of computing power.

"Solid-state components like memory and CPU are at an entirely different level of operation than mechanical drives," says Heather Skinner, an engineer for drive manufacturer Western Digital (www .wdc.com). "As a result, slow hard drives always threaten to constrain overall system performance. There is no speed to waste in drives." The following tips are a guide to the ways small to midsized enterprises can optimize drive performance in systems.

#### **Switch To SATA**

When drive speed is critical, buying the best hardware available is sometimes necessary. "No optimization tools or formatting strategies will yield as much speed as using fast drive hardware," says Don Jeanette, senior product marketing manager for Fujitsu Computer Products of America (www.fcpa.com). "And the fastest drive technology now available is SATA."

## Implement Native Command Queuing

O "On many servers using SATA drives, you can both speed up the performance and even extend the life of drives by implementing NCQ [Native Command Queuing]," says Don Jeanette, senior product marketing manager for Fujitsu Computer Products of America (www.fcpa.com). "The cost is minimal on Linux and Vista systems because all that's needed is essentially enabling the right driver software."

NCQ lets individual hard drives internally optimize the order of execution for read and write commands they receive. Performance

increases are best in applications with extensive simultaneous requests, such as file servers. NCQ performs all optimization on the drive itself, adding no processing overhead to system CPU.

NCQ can only be enabled on SATA drives and host bus adapters that support it. Most newer SATA drives and adapters do, primarily through the AHCI (Advanced Host Controller Interface). As Jeanette mentions, drivers for AHCI are included with Windows Vista (www.microsoft .com) and Linux; vendor-supplied drivers are needed for other operating systems.

#### EASIEST TO IMPLEMENT:

Best Return

On Investment:

## Defragment & Clean Up Drives

O "It may sound overly simple to recommend defragmenting drives, but it's still one of the most effective—and overlooked—techniques for performance improvement," according to Richmond Sy, design engineer at ExcelStor (www.excelstor.com). "Over time, some files become disorganized [fragmented], and resources are consumed."

Defragmentation physically reorganizes a disk's contents to store the pieces of each file contiguously and closer together. While

Linux file systems inherently minimize fragmentation, all Windows file systems have varying needs to be defragmented, either with the built-in disk defragmenter tool or third-party utilities such as Diskeeper (818/771-1600; www.diskeeper.com).

"In addition, to improve performance, you may remove unused programs, run antispyware software, free up wasted space, and disconnect unused network connections," adds Sy.

SATA is actually the standard for a computer bus that controls transfer of data between drives (hard drive or optical) and computers. Drives must be designed to use the bus, so they are SATA drives. Computers must be built with controllers matching the SATA standard, as well, but the resulting throughput is worthwhile, particularly for applications transferring high data quantities. The first generation of SATA hardware can maintain data transfer rates of 1.5Gbps, and the second generation doubles that to 3Gbps. There is a further specification for 6Gbps SATA, although no drive hardware can currently approach that level.

#### **Operate In Sequential Mode**

"Performance comes in many flavors," notes Skinner. "When performance refers to input/output, with the goal of increasing operations per second, a disk drive can increase throughput dramatically when operating in a sequential mode of operation vs. a truly random one. The mechanical latencies of a random environment greatly reduces throughput when compared to sequential."

Software that does intelligent collecting of requests to take advantage of this fact can increase system throughput. In the sequential access mode, a user application needs to process a stream of data by accessing each data unit exactly once, and the units of data are laid out sequentially in files. The challenge to this tactic, of course, is that it can only be implemented by designing or buying applications that use it internally.

#### **Match Fast Drives With Fast Controllers**

"The maximum resulting performance of a drive can only be attained if the host system supports the maximum speed of the drive," says Richmond Sy, a design engineer for ExcelStor (which Iomega is acquiring; www.excelstor.com). "It seems obvious, but often systems are not configured to support high-speed drives attached to them."

For example, make sure that the HDD controller on the motherboard supports SATA II if the drive can run at SATA II mode. The operating system HDD controller settings must also be verified to make sure it is running at the fastest mode. Some chipset manufacturers also have application accelerator software that reduces the storage subsystem bottleneck, enabling faster delivery of data from the

hard drive to the processor and other system-level hardware.

"The resulting performance of the drive is largely affected by the system to which it is connected and the data loaded in it," Sy adds.

#### **Partition Drives For Short Stroking**

Large hard drives, according to Fujitsu's Jeanette, can be tweaked for optimal performance by treating them like smaller drives.

#### **BONUS TIPS**

Enable read and write caching. "Caching is an overlooked and easy way to improve performance," says Don Jeanette, senior product marketing manager for Fujitsu Computer Products of America (www.fcpa.com). Operating systems can be configured to allocate a portion of RAM for buffering data; in some cases, data read caching is configured separately from write caching. On Windows systems, the device properties configuration applet has options on a property page to control caching. "Cache memory is an inexpensive way to improve disk I/O performance," says Jeanette.

Increase the number of spindles per subsystem. On the other hand, if cost is of lower concern, Jeanette says, "Increasing the number of spindles within a subsystem will almost always improve performance. As long as the pipe from HDDs to controller or adapter is not a bottleneck, having more drives working simultaneously will up the overall system performance." Unlike cache reconfiguration, increasing drive spindles means buying new drives or drive arrays.

"Short stroking is a trick that is kind of like defragmentation on steroids," he says. To "short stroke" a disk means that it is partitioned into segments with the goal of only writing data to the outer sectors of the disk's platters. In I/O-intensive environments, this increases performance, as it reduces the time spent by the drive head seeking sectors on a platter. However, short stroking also wastes a substantial portion of the disk drive's capacity.

Typically, a drive will be divided in half, with only the first partition used for high-performance data reading and writing. The other half may be left empty or used for archival storage of data that will not typically be accessed during peak usage periods. For extreme performance enhancement, some system administrators will actually use an even smaller portion of the available storage, sometimes as little as one-quarter, to tighten the physical area where data is accessed.

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## Next-Generation Data Center Automation

#### **Integration Across Traditional Process & Infrastructure Boundaries Is The Foundation Of New Solutions**

by Kurt Marko

THE ARSENAL OF COMPUTER and network technology available to business has grown exponentially more powerful and sophisticated during the past decade, yet the data center environment hosting all this firepower hasn't always kept pace. Several companies with massive hosting requirements, along with a number of industry experts, have recently outlined hallmarks of socalled NGDCs (next-generation data centers) designed to keep pace with increasing demand and hardware advances. A major theme in most NGDC plans is the need for greater software automation of routine and often error-prone tasks.

Many data centers, and the administrative

groups supporting them, have grown organically and without much consideration of how to scale operations as systems and applications are added. Despite the business criticality of their hosted services and applications, the processes in many data centers resemble those of pre-industrial artisans and craftsmen rather than a modern, mass-production factory floor. Automation is essential to ensuring that the NGDC runs like an efficient assembly line. Improvements in automation technology have followed a number of major trends that can guide IT organizations as they look for ways to turn their data centers into a true IT factory.

#### IT Trends Motivating Change

IT is responsible for the smooth operation of services and processes critical to most

business operations. According to Andi Mann, research director at Enterprise Management Associates (www.enterprise management.com), this has caused IT to become more concerned with the end-toend health of these business services rather than the condition of individual infrastructure components. Historically, automation tools have focused on specific technology silos—servers, networks, or storage and IT organizations have mirrored this compartmentalization, but Mann says that as IT firms move toward integrated service management, automation technologies are following suit.

Mann says that the primary business drivers of this change are strategic, not short-term cost controls. He sees IT organizations trying to free up resources from routine maintenance and troubleshooting by using automation to reduce complexity. Evelyn Hubbert, senior analyst for infrastructure and operations at Forrester Research, concurs, noting that this exposes yet another 80/20 rule operative in most IT departments: 80% of IT work is on maintenance, with only 20% on innovation and development. She says IT departments are using automation to increase the amount of

whole." He stresses that users need "three nines" availability for an entire application; availability for individual server and nettools must be able to manage a full service

it's insufficient to merely guarantee high work components. He adds that integrated and workflows that compose it. Ramanathan says these business service modeling tools are best integrated with an overall CMDB (configuration management database) that contains an inventory of an organization's IT assets. Hubbert says that accurate "blueprinting" is critical to ensuring that services can be repeatedly deployed and configured and that some provisioning tools now automate the discovery and inventory of devices into a CMDB, which can streamline the documentation of a service's hardware, network, and storage components.

Service management tools are another product category critical to a next-generation automation suite, according to Ramanathan. These typically feature software controlling release to production, change management, and monitoring processes. Hubbert notes that concern with IT policy compliance and governance is fueling increased interest in auto-

#### Most experts agree that a prevailing technology trend affecting all aspects of data center automation is virtualization.

by coordinating all tasks used to maintain an application.

Another major trend in automation, according to Ramanathan, is management

of the entire life cycle of a service, including release-to-production processes, ongoing monitoring, revision management, and decommissioning. Most experts agree that a prevailing technology trend affecting all aspects of data center automation is virtualization, which now spans not only servers but also storage and networks. Thus, automation software is now required to incorporate physical, virtual, and logical elements.

#### **Technologies & Products**

These trends mean integrated IT process automation products are particularly hot, according to Mann. "These are the glue that binds multiple disciplines," he says, adding that they connect silo-based automation tools to larger business processes. Hubbert adds that whereas

older process automation tools might have integrated multiple steps within a particular technology domain—say, provisioning a new server from bare metal to a bootable, standard OS—newer tools integrate multiple IT workflows, from provisioning to trouble ticketing or change management.

In order to build and automate processes across a complex business service, users need a way of modeling the service, mapping the specific infrastructure components mated change management applications such as Tripwire Enterprise (www.tripwire.com) and Solidcore S3 (www.solidcore.com).

#### Effect On IT

Experts agree that automation technology is not a magic bullet that can turn a chaotic data center epitomized by constant firefighting into a smoothly operating IT factory. "The tools only help if you have good processes to begin with," says Hubbert.

Similarly, Mann says successfully using integrated tools to automate business services requires IT to change how the data center is being managed. "A silo-based mentality is not to your long-term benefit," he notes. Mature IT firms with a business services philosophy will find a number of automation products ready to bring their next-generation data center into the industrial age.

#### **Most Promising Technology**

Integrated IT process automation software, aka automation management platforms or run book automation suites, facilitates creation of complex automation workflows spanning infrastructure silos—servers, networks, and storage—and job categories from the help desk to application support.

Leading automation platforms include:

- BMC/RealOps Autopilot (www.bmc.com)
- HP Opsware System 7 (particularly
- Operations Orchestrator; www.hp.com)
- Opalis Integration Server (www.opalis.com) Optinuity Oasis (www.optinuity.com)

#### "creative" work while also helping to reduce operational errors by facilitating consistent, repeatable processes.

#### **Technology Trends In Automation**

The focus on cross-functional integration is something Kalyan Ramanathan, director of marketing at Opsware (now part of HP; www.opsware.com), says Opsware customers are looking for, adding, "they want to manage and automate IT services as a

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#### The Future Of Networking & Connectivity

Continued from Page 1

So-called Web 2.0 sites, such as My-Space and YouTube where users upload multimedia files, will proliferate into the professional enterprise sector. Besides the requisite computing power to handle the increased information flow, the data pipes to and from data centers must not pose bottlenecks. They will have to handle interactive Web and other bandwidth-intensive applications users will increasingly expect.

"All existing applications are evolving to accommodate more, different, and richer input and output sources, which means that they are becoming more network-centric," O'Neil says. "At the same time, most new applications are being built on collaborative Web 2.0 platforms, which means that they, too, are adding to the communications demands placed on the corporate infrastructure. At some point in this evolution, we stop viewing data centers as being primarily places that house data processing and storage equipment, and which use communications to connect that equipment to other locations, and start viewing them instead as communications hubs, which are colocated with storage and processors."

#### **Bringing WANs To The LAN Party**

Next-generation data centers should also offer offsite offices and users the same connectivity options with the main enterprise's servers over the Internet as they would over a LAN connection. Ideally, for example, uploading data for storage or sharing very large files with a data center server should be done just as easily over the Internet as it is over a LAN connection.

boost remote file- and application-sharing speeds over the public Internet as if a user were connected directly to the enterprise's LAN. Enterprises are now beginning to wake up to the possibilities that WADS offer, which such firms as Cisco (www

To do that, a technology known as WADS (wide-area data services) serves to

As next-generation data connectivity will require more computing power and bandwidth, admins will have to find ways to reduce data center power consumption while boosting network performance.

.cisco.com), Expand Networks (www .expand.com), GlobalSCAPE (www.global scape.com), Packeteer (www.packeteer .com), Riverbed (www.riverbed.com), and Silver Peak Systems (www.silver-peak .com) provide.

"The current acceleration solutions, while promising to fully satisfy the organization's needs for distribution of data, have not optimized the ability of companies to distribute out the files to branches and make the best use of their resources. The [WADS] portion has been overlooked," says Timothy J. Barton, vice president of operations for GlobalSCAPE. "Integrating [WADS] in the organization will mean that you can leverage more of the data center's resources. Only the critical data that needs to be at the branch office is distributed, while centralized control over critical cor-

porate data is maintained while minimizing bandwidth use."

#### **Doing More With Less**

As next-generation data connectivity will require more computing power and bandwidth, admins will have to find ways to reduce data center power consumption while boosting network performance.

"Right now, the IT folks have no incentive to spend an additional dollar on energy-efficient IT hardware because the savings in capital and infrastructure accrue to the facilities department (which has a

servers so that buyers can compare energy performance on a consistent basis before purchasing."

A change in mindset will also involve more emphasis on processor performance, which along with other technologies can reduce data center power consumption by 45%, says Brent Kerby, an AMD (www .amd.com) product marketing manager. "From AMD's perspective, processor power management is a technology that is available today but isn't widely used, [which is] mostly due to lack of awareness," Kerby says. "IT data center managers often relate power management to that used to power down desktop machines, etc., thinking that if they enable processor power management, it might affect server response and performance and/or put the servers in a state where they can't be monitored."

Indeed, beyond accommodating an everincreasing amount of data, "the primary thrust" of design for next-generation connectivity and networks will be related to power and heat management, O'Neil says. He adds, "One practical implication of this will be that as new facilities are built, heat, power, and security management from all parts of the buildings will be networked back to the data center."

separate budget)," says Jonathan Koomey, a consulting professor at Stanford Uni-

versity, department of civil and environ-

mental engineering. "We also need more

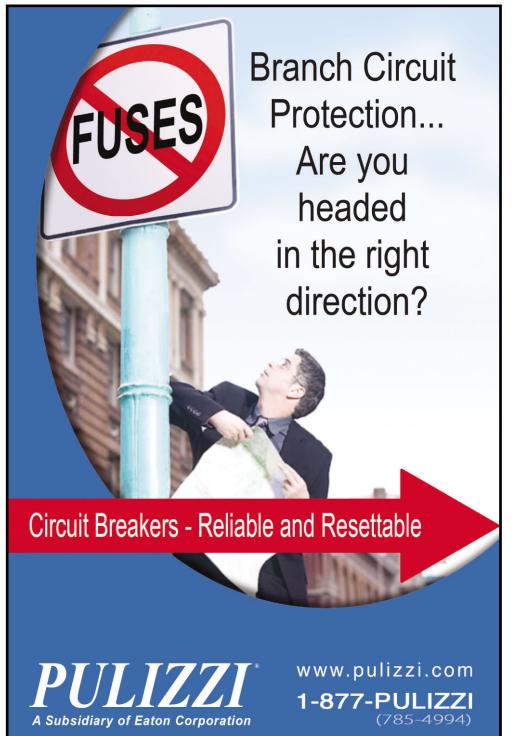
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#### **Most Promising Technology**

Virtualization can help admins design networks that can do all of the necessary heavy lifting for next-generation applications and connectivity while reducing data center power and resources. While most admins have at least some inkling about how the technology works, the basic concept involves consolidating servers so they run different applications and even operating systems. The admins can thus use a single server to run email

and storage applications instead of two or more machines, for example.

The benefits include a reduction in power consumption, time spent managing servers, and floor space while less peripheral equipment such as backup units and UPSes are required. says Michael O'Neil, IT consultant and cofounder and CEO of IT in Canada (www.itin canada.ca).





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## Cloud Computing: Rent, Don't Buy

Continued from Page 1

application in the cloud. That's why Google Docs and Spreadsheets are not cloud computing; they are Software as a Service," says James Staten, principal analyst of the infrastructure and operations group at Forrester Research.

Dekel Tankel, senior engineer at Giga-Spaces (www.gigaspaces.com), agrees. Some people think cloud computing is a service where they sign up and the provider already has an application waiting for them, but that is the definition of SaaS, Tankel explains. With cloud computing, an enterprise signs up to use the provider's infrastructure but brings its own application, according to Tankel.

#### **Cloud Computing Uses**

SMEs need a quick, simple way to test new applications, according to Staten. Renting cycles in a compute cloud is the cheapest way for them to quickly acquire infrastructure to do that and then simply "give it back" when they're done. If the application works, the enterprise can continue to rent that infrastructure, which is still cheaper than building out and managing their own.

Some SMEs need lots of IT for other reasons. An SME may be building a business in online sales, or it may be doing sophisticated CAD work, illustrates Charles King, principle analyst at Pund-IT, an IT industry analysis firm. "Depending on how much IT they need, such a business could get a lot out of cloud computing," he says.

While the scenarios are unique, the advantages are similar: as much infrastructure as an enterprise needs, as fast as they

need it, without the costs of building and managing it themselves.

SMEs don't have to own their own compute clouds to run these applications. They simply choose a cloud service provider and give the provider a copy of the application, according to John DeBenedette, virtualization and managed services expert and vice president of IT at INTTRA (www.inttra.com), a large ocean shipping ecommerce platform provider. The cloud provider then sets it up, hosts and manages it, and bills the enterprise in a metered fashion like a utility would.

By using a service, an organization cuts the costs associated with provisioning and managing its own infrastructure. This is especially appealing for SMEs and startups that might like to avoid these headaches in order to concentrate on their core businesses, according to Staten.

#### **Calculating Causes**

According to King, the biggest driver for cloud computing is ROI. During the past five years, IT has deployed increasingly disparate computing environments. It has become more challenging for IT to manage these environments and get the most from them over time. Cloud computing maximizes ROI by creating virtual servers on existing assets and distributing applications across them, leveraging more production from the same physical servers.

Added income streams are another tempting motivator. Through cloud computing, companies with globally distributed server farms can host and manage applications for SMEs. This gives these infrastructure giants additional revenues from existing IT

resources simply by selling off idle compute time. "Mega-scale providers like Amazon and Google are looking to monetize their massive assets, which is an important formula driving the cloud phenomenon," says DeBenedette.

Finally, the maturity of virtualization, open-source programming, and the Linux operating system, which are integral to dis-

tributed and grid computing, are key enablers for compute clouds, according to DeBenedette.

SMEs are in prime position to take advantage of a particular flavor of cloud computing, the one that converts internal compute clouds into everyone's utility computing, which will likely be the most prevalent in the long haul.

#### **Budding Cloud Utilities**

"The biggest name in cloud computing is Amazon, with its Amazon Elastic Compute Cloud (EC2)," according to James Staten, principal analyst of the infrastructure and operations group at Forrester Research. Amazon.com is offering adjustable compute power to application developers via the Internet. SMEs can use the EC2 to quickly scale up and down to the number of virtual servers they need based on the load their applications are under.

GigaSpaces (www.gigaspaces.com), an infrastructure scalability software vendor, is providing the infrastructure software for Amazon.com's EC2, according to Dekel Tankel, GigaSpaces senior engineer. EC2 hosts and manages the cloud computing environment for the customer, according to Tankel. SMEs simply pay for the virtual servers they need when they need them to run their applications, he notes

With EC2, the customer's application runs as a single application, though it is distributed across many virtual servers over the Internet. EC2 can move the application around to balance the load, making the most efficient use of all the servers, according to Tankel.

Terremark Worldwide, another leader in cloud computing, offers Infinistructure, which

is comparable to Amazon.com's offering, according to Staten. "They provide a virtual machine [virtualization] and take care of application administration and hosting," says Staten. Another noteworthy offering, according to Staten, is The Grid Layer (www.thegrid layer.com) from Layered Technologies (www.layeredtech.com). The Grid Layer uses grid computing to host and manage online applications for SMEs.

However, among offerings that are cloud computing, there are some that may not be much help to SMEs. IBM (www.ibm.com), for example, has announced an offering called Blue Cloud. But, the IBM model involves selling hardware and software to large enterprises so they can create their own compute clouds, according to Dennis Quan, senior technical staff member, IBM. This would be too costly for most SMEs

IBM has yet to announce a cloud computing offering as a service. While a service would be more suitable for SMEs, there are no other cloud computing announcements or offerings from IBM at this time, according to Quan.

"There is lots of speculation that Google, Microsoft, eBay, and Yahoo! are going to jump in to the cloud computing space, but these are all rumors," Staten says.



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## Upcoming Power & **Cooling Trends**

#### What's Ahead For These Two **Top Issues In The Data Center?**

by Elizabeth Millard

ALONG WITH NETWORKING, automation, and servers, the two top issues on every data center manager's mind are power and cooling. Increased density and different product options have brought these two main areas to the fore in recent years, and they're likely to keep bringing challenges in the near future.

But given their importance, power and cooling are also driving more product and strategy development, as well, which means that next-generation data centers could have more control and efficiency in these areas than ever before. Here's a glimpse at some of the possible trends that are just over the horizon.

#### More Monitoring & Resource Allocation

Putting in cooling systems and getting more efficient power systems are just part of the equation in a next-generation data center. Also crucial will be how those systems are monitored and how resources are allocated.

Data center managers will probably spend some time in the next year evaluating software that is tailored for these tasks, notes Steve Yellen, vice president of product and market strategy at Aperture (www.aperture .com), a provider of software for managing the physical infrastructure of data centers.

"Holistic data center management, including real-time monitoring, will allow

#### **Most Promising Technology**

Already offered by companies such as Spray-Cool (www.spraycool.com) and Cooligy (www.cooligy.com; acquired by Emerson Network Power), in-chassis cooling aims to reduce power and cooling issues by directing the focus where heat generates: from inside

SprayCool's system uses a liquid cooling agent that captures heat at the chip level, and Cooligy is similar, cooling chips with a fluid-based technology. According to research firm Gartner, about 15% of servers will incorporate technologies like these within the next few years.

data center managers to understand the relationship between space, power, and cooling resources, which gives the ability to react quickly to changes in the environment," Yellen says. "They must implement a system that allows them to see past trends, have a holistic view of current resources, and forecast future requirements."

Enterprise management software will be

increasingly important, Yellen adds. The current use of highdensity devices is generating issues about power, cooling, and other resources and driving the need for better software that takes these factors into account, he says. In other words, look for even more choices in the near future when it comes to management systems.

#### Liquid Cooling

Although the use of liquid cooling has been much discussed among data center managers, the strategy hasn't been widely deployed, says Steve Prather, senior vice president of sales engineering and operations for ViaWest (www .viawest.net), a provider of colocation and managed services. That may change in the next-generation data center, although a few kinks still need to be worked out.

A handful of manufacturers is currently designing cabinets that provide standalone liquid-cooled radiators, acting as the rear door of the cabinets, Prather says. This allows high-density power delivery into traditional cabinets. Other manufacturers are designing liquid-cooled infrastructure options that tie into existing data center environments, he adds.

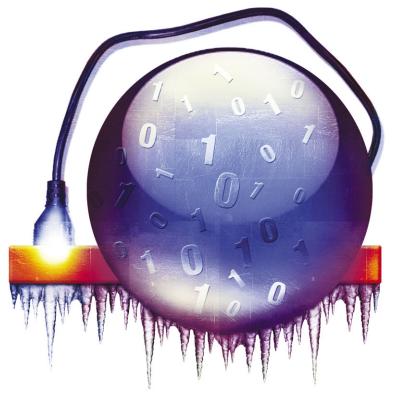
"While these options provide a very aggressive cooling capability, they significantly increase risk for customers due to the fact that water and electricity don't mix," notes Prather. "They also increase the upfront costs to install, which at times may outweigh the benefits."

Despite those drawbacks, advances in liquid cooling may be making their way to data centers in the near future, especially if manufacturers develop more affordable options.

#### **Customized Cabinets**

With data centers coming in different configurations, and some companies working to blend new spaces with older buildings, it's likely that the data centers of the near future will boast customized cabinetry that is geared toward the power and cooling needs of a specific center.

Power consumption often means that heat must be exhausted back into the data center and cooled, Prather notes. Many custom cabinet systems move the exhaust heat



in directions different from traditional cabinets and can be fitted with ducting that directs the flow to heat return areas or outside of the data center.

"Solutions that require ducting of any sort to direct exhaust heat are not able to be installed in the typical deployment model and must be customized into the data center space," says Prather. "Venting the exhaust heat outside of the data center poses unique challenges, as data centers are designed to be highly controlled environments for cleanliness and fire suppression, and exhausting air out of the space requires that fresh air be brought in."

Because of this reason, it's likely that a next-generation data center will have a tailored setup and new construction space rather than a modified warehouse or existing space. Already, data center design is becoming a more complex and growing field, and so architects specializing in just these issues will be in high demand in the coming years.

#### Wide Open Spaces

Although software developers are busy creating tools that can monitor and tweak power and cooling allocation, it's likely that there will still be need within centers to have a significant amount of empty space where the physical capacity of a center can't be filled due to power and cooling issues, says Kris Domich, principal consultant for data center and storage solutions at Dimension Data (www.dimensiondata.com).

Over time, data centers will be able to

avoid this problem, Domich believes, but it will take time for better tools and virtualization to make an impact on decreasing the capacity challenge.

#### **Going Green**

One of the largest trends taking hold now at data centers is the "greening" being done with equipment and space as companies are seeking efficiency improvements. These efforts will lower power consumption and, in turn, change cooling as well through the implementation of more efficient products.

Tomorrow's data centers will likely operate under federal mandates that target data centers in particular, Domich says.

As the economy softens and the data center costs rise, green initiatives will become increasingly compelling, notes Calvin Nicholson, marketing manager

at Server Technology (800/835-1515; www .servertech.com), which manufactures products to reduce downtime and improve data center power management.

"Companies are going to take a more serious look at what's going on in terms of green grids and other strategies," Nicholson says. "They're going to look at power usage on the smallest levels." For example, Nicholson adds, next-gen data center managers will monitor power usage of devices and even how much power is being drawn per outlet.

As the economy softens and the cost of running data centers goes up, green initiatives will become increasingly compelling.

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## The Road Ahead For Servers

#### **Experts Weigh In With Their Predictions On Next-Generation Servers**

by Christian Perry

IN THE SERVER ARENA, manufacturers constantly strive to trump the performance of previous server line generations. Their success has in turn boosted the overall speed of data center functions, but it

has also ramped up demands for cooling, power, and space. Those side effects contributed heavily to a greening effect in 2007, and future server generations will continue along this path of increased speed and computing efficiency with an eye toward energy savings.

"Increased complexity in data centers is a major reason for the advances you'll see in current and next-generation servers," says Sally Stevens, director of PowerEdge Servers, Dell Product Group (www.dell .com). "Data center complexity and rising IT life cycle costs mean businesses spend too much time and money maintaining systems and just trying to 'keep the lights on.' Dell believes this approach has to change so that customers can focus more on innovating and growing their business—not just managing and growing their data centers."

#### Virtually Vested

Today's servers satisfy the needs of a wide range of data center configurations, but as current trends gain more of a more servers shipping with embedded vir-

"Support for embedded virtualization will simplify the deployment of virtual infrastructure and increase adoption," Medina says. "Hardware-accelerated virtualization



should decrease the performance penalty

Anil Uberoi, vice president of product management and chief marketing officer at Levanta (www.levanta.com), a firm spe-

associated with virtualization today, making it a better platform for a broad range of

automation of Linux server management is likely to increase in coming years.

Medina notes that next-generation servers will add fine-grained control at the processor core level, which will make power management features even more useful and result in more efficient servers.

AMD's (www.amd.com) John Fruehe, manager of worldwide market developments for Server/Workstation Products, says that

> this more intuitive management at the processor level will help customers better tune their applications for improved processing efficiency.

> "As the price of a gallon of gas continues to soar, so does the cost of powering data centers," Fruehe says. "I haven't met a CIO willing to bet that they will spend less next year on power than they spend this year. Most customers are willing to draw the line at today's levels-give me more performance in the same power envelopes—but the days of more performance at the cost of more power are quickly coming to an end."

#### **Memory Boost**

Whereas data centers of the past relied on servers primarily for network infrastructure, file/print sharing, and messag-

ing, servers today and in the future will be relied upon for line-of-business and other critical applications, Fruehe says. "This forces customers to ensure that the systems will have the scalability to meet not only today's challenges but future growth because nobody wants to be the person who recommended a system that needs to be replaced in a year," he explains.

This need for scalability will result in the more widespread use of integrated memory controllers, according to Fruehe, who adds that this will aid in removing the application bottleneck during data transfers. Likewise, Medina anticipates that servers will support more and faster memory and points to AMD's NUMA (Non-Uniform Memory Access) memory configurations, which allow for more efficient use of large memory amounts. The reason for these memory enhancements, he says, is the increasing popularity of virtualization and the adoption of 64-bit technology.

## "On-die memory controllers help to max-

imize performance of servers with large amounts of memory. AMD has this today, and Intel has it on the roadmap. FB-DIMMs currently used by Intel are very powerhungry and will likely not be the standard in the future. DDR3 will probably be the next logical step," Medina says.

#### **Change For The Better**

In the case of servers, changes will certainly bring side effects-but experts contend they'll almost exclusively be positive.

"As next-generation servers become more power-efficient, flexible, and easier to manage, customers will be able to drive cost and complexity out of their data centers," Dell's Stevens says. "They'll achieve a better return on investment, more efficient service levels, increased uptime, and enhanced long-term flexibility with systems that utilize 100% openstandard technology. New server technology also will enable customers to reduce data center sprawl because they'll be able to deliver the same, or even more, compute performance using systems that take up less space."

However, data center managers will still need to carefully plan their data centers to accommodate these servers, regardless of their increased efficiency. Fruehe says that the density of the systems, along with the inherent power constraints, demands a highly logical approach to the layout—or even reconfiguration—of a data center.

#### **Most Promising Technology**

Server virtualization showed its massive potential last year, and it's poised to make even greater inroads into the server market in the future. Sally Stevens, director of Power-Edge Servers, Dell Product Group (www.dell.com), says that we can expect more products designed to simplify virtualization using features such as embedded virtualization software, increased memory and I/O capacity, higherperforming processors, and ultra-efficient power supplies.

"Virtualization-optimized servers will help customers address persistent data center challenges and enable them to deploy, use, and maintain IT more efficiently than ever before," Stevens says.

Says Terremark Worldwide's (www.terremark .com) Chairman and CEO Manuel Mendina: "We feel so strongly about virtualization technology's ability to revolutionize the industry that it was one of the main drivers behind our recent acquisition of Data Return. We feel that the Infinistructure utility computing platform that leverages virtualization will have a major impact on our business in the years to come."

#### **Next-generation servers will add fine-grained** control at the processor core level, which will make power management features more useful.

foothold, future server generations will need to adapt to adequately handle modern demands. According to Manuel Medina, chairman and CEO of managed IT infrastructure services company Terremark Worldwide (www.terremark.com), virtualization will become a crucial piece of the server puzzle in the future, and we'll see

cializing on Linux data center automation, says that as virtualization use grows in data centers, systems managers will need to devise infrastructure plans that allow centralized management of physical and virtual containers. This is particularly important in Linux systems, which often require expensive manual management. As such, the

**NETWORKING & VPN OCTOBER 26, 2007** 

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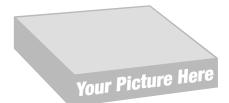
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#### **Product** Releases

#### CLIENTS

■ AXIOMTEK released the ETM830 and ETM820, two ETX 3.0-compliant CPU modules. The ETM830 features an Intel Core 2 Duo processor and is powered by the Intel 945GME+ICH7M chipset. The CPU module comes with up to 2GB of DDR2-533/667 system memory and dual SATA-150 interfaces. Additionally, the ETM830 supports optional 5.1-channel AC'97 audio output, and it reserves a 18/24-bit single/ dual-channel LVDS LCD panel. The I/O connections include four USB 2.0 ports, fast Ethernet, PATA-100, DualView, and more. The ETM820 uses an Intel Pentium M processor and can be powered by the Intel 915GME or 910GMLE+ICH6M chipset. Customers can select an Intel Pentium M processor for higher performance or a fanless ULV Intel Celeron M processor.

. . . . . **■ Champion Solutions Group** announced its Printer Maintenance Program to offer remote warranty, onsite warranty, and postwarranty support for printers, multifunction peripherals, and scanners. Through the Printer Maintenance Program, Champion can service monochrome and color laser printers, inkjet printers, dot matrix printers, thermal printers, line and wide format devices, plotters, and POS (point of sale) printers. Additionally, Champion can service the associated printer components. The service can help shift printer-related help desk calls from your internal help desks to Champion and its service partners. Champion has also integrated the Printer Maintenance Program with its Managed Maintenance support team and its Webenabled inventory and contract management tool. The Web-enabled tool provides password-protected reports on enterprisewide IT hardware infrastructure assets.

#### Messaging & Telephony

■ IBM has introduced IOPES (IBM OmniFind Personal Email Search), a "smart" search software designed to help users sift through email in order to locate buried information through identifying the most germane information in a search query. IOPES, available for Lotus Notes, uses advanced algorithms that can interpret partial queries in order to find information such as phone numbers, people, meetings, presentations, documents, images, and more. Userdefined concepts can be shared and utilized to build a more unique search system.

. . . . .

■ McAfee introduced GroupShield 7 for Microsoft Exchange and GroupShield 7 for Lotus Domino. Both editions of Version 7 include spyware-blocking tools, antispam technologies, and improved quarantine management. GroupShield protects a company's servers from becoming infected with malware that can then attack end users' systems. Email can be blocked according to the file names of attachments or by file types, subject line, message body, attachment content, or message size. The software also integrates with ePolicy Orchestrator for management from a single console.

#### **NETWORKING & VPN**

■ ScriptLogic has announced Desktop Authority Remote Management Gateway, a standalone remote management and desktop configuration product that is ideal for use in local, remote, and mobile applications. This product includes an RM client

for troubleshooting using a central, Webbased location. Desktop Authority provides tools for controlling a user's desktop and is compatible with Windows 2000/XP/Vista (both 32- and 64-bit). Desktop Authority Remote Management Gateway is priced according to per-administrator license. Volume discounts are available.

. . . . . ■ Streamcore announced its StreamSense platform, which enables management of branch office application performance from the central data center. Data center users can see and control application and network performance at branch offices, and the automated application visibility package offers branch-level and data center-level reporting. The Streamcore appliance sits behind the data center access router and can manage, report on, and correlate WAN traffic from branch offices, and the branch offices still enjoy QoS and ABBA engine functionality. StreamSense supports more than 1,000 branch offices from a single data center.

#### PHYSICAL INFRASTRUCTURE

**■ Computer Peripheral Systems** has revamped its ARR and CPS power strips and introduced the ARR+. The ARR+ features a serial port and programmable configuration settings. The ARR+ and serial port-equipped CPS are capable of automatic power cycling for network equipment or servers. All of the power strips feature the option of ITTO (Internal Touch-Tone Control Option), which provides password protection, status inquiry, and remote programming, as well as an increase of 540 joules for greater surge protection. The power strips each have a 15-amp breaker and EMI/RFI filtration and are rated at 110 to 125VAC. The ARR and ARR+ start at \$89 and \$99, respectively, while the CPS starts at \$115.

#### SECURITY

**■ Elcomsoft** announced the latest version of its AEFSDR (Advanced EFS [Encrypting File System] Data Recovery), which lets users access protected files on a PC that is unbootable or otherwise inaccessible via logging in. AEFSDR 3.3 offers users the ability to read and decrypt named data streams and also fixes some bugs that were present in the previous version. Supported operating systems include Windows 2000/XP Pro/Server 2003/Vista (Business, Ultimate, and Enterprise). Users can purchase a Personal License for noncommercial use for \$99 or a Business License for \$199.

Elcomsoft also introduced the newest iteration of its PSPR (Proactive System Password Recovery) software for recovering Windows 95/98/Me/NT4/2000 login passwords, Win95/98/Me/NT4/2000/XP/2003 auto login and WinXP stored user passwords, WEP and WPA-PSK encryption keys, VPN passwords, and more. PSPR 5.2 features better exporting Domain Cached Credentials in Windows Vista and fixes several bugs found in the previous version. A Personal License for noncommercial use is available for \$60, and a Business License costs \$120.

■ Tenable Network Security has released the official GUI for the standalone version of Nessus. NessusClient 3.0.1 provides a consistent interface across platforms, including Linux, Mac OS, and Windows, and supports connections to multiple scanners simultaneously. The software also lets users view results in real time, before the end of the

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#### **Product** Releases

scan. Thanks to a new .nessus file format, scan policies, results, and targets can be saved to a single XML file. It also fixes two earlier bugs: It now properly enables plug-ins and properly configures port scanners and plug-in preferences when exporting a policy to the older .nessusrc format. NessusClient 3.0.1 supports Windows, Debian Linux, Fedora Core 6/7, Ubuntu, OpenSUSE 10.2, and Red Hat Enterprise Linux 4.

#### **STORAGE**

- CRU-DataPort announced the SAS/ SATA Data Express DE75, an updated incarnation of the StorCase Data Express DE75. The space-saving, removable steel hard drive enclosure is rugged enough for hot-swapping duty in industrial, military, government, and commercial systems. It features a security lock, a SCSI ID indicator, and ample heat dissipation characteristics.
- EMC announced the launch of a user community for its ControlCenter SRM (storage resource management) software, as well as enhancements to EMC SAN Advisor and EMC Smarts Storage Insight for Availability, other components of its SRM package. The SRM package is designed to increase productivity and performance while lowering storage management costs for customers through simplification. Features of EMC ControlCenter include discovery provisioning, reporting of storage resources, and fully enabled SRM in virtual environments.

EMC also announced the availability of Managed Availability Services, a solution designed to help customers manage, measure, and improve business continuity programs through dedicated program management teams and subject matter experts who develop strategies to improve recovery time and reduce data loss in the wake of a disaster. These business continuities are matched to each customer's specific requirements. EMC Global Services professionals highlight key business reports to allow customers to track investments and progress with efficiency. Managed Availability Services manages IT suppliers and stakeholders for business continuity to streamline accountability and reduce management overhead.

**■ Enhance Technology** announced the UltraStor RS16 IP-4, a Quad GbE iSCSI independent RAID storage system, the latest in the UltraStor RS series family. The 3U, 16-drive RS16 IP-4 includes key features such as Snapshot, N-way Mirror, RAID 6 data protection, automatic background data regeneration, dynamic online volume expansion, and Multi-Path I/O support for Windows workstations and servers.



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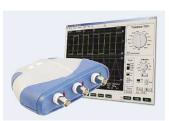
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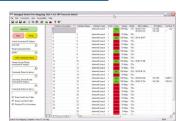
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#### **OPINIONS**

#### 2008's Security Resolutions

According to various industry pundits, 2007 was the year of the data breach, and given the TJX incident, this is not surprising. Depending on the statistics you believe, the breach resulted in the exposure of the information of between 46 million (TJX's estimate) and 94 million individuals (the estimates of Visa and MasterCard). Either way you slice it, that's a lot of exposed information. With that in mind, let's work toward making 2008 the year of smart security and make some resolutions accordingly.

#### I Resolve To Increase Security Funding

Info-Tech Research Group surveys indicate that the average enterprise expenditure on IT security is 7.3% of the IT budget. Furthermore, other studies show that on average, enterprises dedicate 6.5% of revenues to IT as a whole. Crunching the numbers, that's just under 50 cents spent on IT security for every \$100 of revenue.

At a minimum, all enterprises should be spending to this level because if they're not, they're lagging behind. And while that's a start, does 50 cents for every \$100 of revenue sound like enough to protect that revenue, the infrastructure that generates it, and the data that proves it? I don't think so either. Exactly how much more should be spent isn't something that can easily be defined, but by increasing to 65 cents per \$100, IT security is effectively raised to 10% of IT security spending, an almost 50% improvement on the current average.

#### I Resolve To Make Security A Fixed Responsibility

One of the first places the extra spending should go is on people, specifically people dedicated to the management and operations of IT security. By not making security an assigned responsibility within

the enterprise, it becomes nigh on impossible to actually manage it effectively and efficiently.

While not all enterprises will have the wherewithal to afford an employee whose only responsibility is security, every enterprise should ensure that security is the assigned responsibility of one employee, even on a parttime basis. By doing this, the enterprise ensures that some-

one is always aware of what is going on with security matters and is always up-todate on security threats, and the enterprise is therefore more likely to always be protected. Giving security a face will also make it seem more real to the employees of the enterprise and therefore more likely that those employees will adhere to the security requirements the enterprise sets.

#### I Resolve To Document My Security Requirements

Does your enterprise have a set of security documents? If it does, and most do not, are the employees of the enterprise aware

of the contents and the restrictions that those documents put on daily activities?

A set of security documents (policies, standards, baselines/guidelines, and procedures) is essential for two reasons. First, it establishes due diligence. If a breach was to occur and legal action taken against the enterprise, it will be required to demonstrate it has taken appropriate measures to protect the data. Without documentation, the enterprise will have a very hard time showing that it has taken its responsibility seriously.

> JAMES DUIN

James Quin is a senior research analyst with Info-Tech Research Group. Quin has specializing in IT security services. Quin holds a B.A., an Honors B.Sc., and an M.Sc. from the University of Toronto.

worked in the IT field for more than 10 years,

Secondly, and equally as important, formal documents allow the enterprise to define its security goals in a format that people can reference. Without codifying these goals, it can't ensure that employees will follow them, let alone even be aware of them. Further, the enterprise won't be able to spend wisely on security solutions because it won't be able to clearly see what

#### I Resolve To Be Careful With My Data

goals need to be achieved.

Electronic data is the lifeblood of the modern enterprise. It proves revenues, demonstrates earnings, and shows who our

clients are. If our data is compromised or lost, we effectively lose a significant chunk of our enterprise. Because it is that important, we have to take careful measures to protect it, and while firewalls and antivirus solutions are deployed almost ubiquitously, they are simply not enough.

The first measure that needs to be implemented is some form of data access control. Providing unfettered access to the enterprise's data by all insiders allows too much freedom and just asks for trouble. Coupling

> these access controls with a reporting function ensures that even if the data is accessed inappropriately, we'll still know what happened to it. Data doesn't always stay safely tucked away in the repositories we build for it, however, and so ensuring that we protect it while in transit is just as important as restricting access to it in the first place. Of course, clearly establishing what data can be allowed to move around in

the first place will really minimize the risk, but in the end, the encryption of data files is just as important as access controls.

Four resolutions. Not necessarily simple resolutions, but not overtly complicated by any measure. Are they going to guarantee the safety of the enterprise? No, but no amount of spending, no number of dedicated individuals will do that. What they will do, though, is allow us to move forward with a little more care, a little more protection, and significantly less risk.

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#### PRODUCT OF THE WEEK

## KVM Switches Simplify Data Center Management

## **Information Support Concepts' CAT 5 Switches Handle Both PS/2 & USB Servers**

 $by\ Darrell\ Dunn$ 

As Businesses grow and technology requirements expand, IT executives and data center managers face an increasing challenge selecting infrastructure devices to optimize server management, particularly as heterogeneous server installations emerge over time with unique physical management requirements that can create a nightmare mish-mash of switches and cabling within often-limited operational areas.

With more than 20 years as a leading distributor of networking and telecom products, Arlington, Texas,-based Information Support Concepts (817/649-1788; www.iscdfw.com), aka ISC, has built its reputation within the industry by assisting businesses in deploying innovative solutions to reduce cost and simplify data center operation, including the recent introduction of a line of CAT 5 KVM switches that helps provide improved management of growing facilities.



PRODUCT OF THE WEEK

INFORMATION SUPPORT CONCEPTS CAT 5 KVM SWITCHES (UIP-3202 SHOWN)

**Description:** Work with both PS/2 and USB servers and provide for high density and reduced cabling

**Interesting fact:** The use of the RJ-45 CAT 5 interface allows for a larger number of ports in a smaller density.

(817) 649-1788 www.iscdfw.com Reducing the complexity of IT tools is one of the most significant efforts that an IT executive can make to reduce operational complexity, says Bill Hostmann, an analyst with Gartner. "Businesses are getting more and more complicated just in terms of the number of connections and interactions and transactions they must deal with," he notes. "Being able to choose IT tools that reduce inherent complexity is vital to improving operation."

ISC recently began shipping a line of IP CAT 5 KVM switches manufactured by Chinese equipment manufacturer Austin Hughes Electronics that provide IT departments with new options for maximizing the management of server installations, including the ability to mix and match PS/2, USB, and Sun-based servers with a single switch, manage a larger number of ports, increase distances between the switch and servers, and reduce and simplify cable management.

"These switches address any number of headaches that businesses are increasingly facing in trying to improve the management of their server installations, improve efficiency, and reduce cost," says Jack Burlin, product manager for ISC. "We spend a lot of time talking to people inside our customer operations about the problems they are having to deal with on a regular basis, and the size of cable bundles and just having enough room near the servers and switches to stack everything needed has become a real challenge which these CAT 5 KVM switches can readily address."

#### **Multiple User Benefits**

The four primary benefits of the CAT 5 KVM switches are the high-density capability to address either 16 or 32 ports with a single 1U switch, the ability to increase the distance between the server and KVM switch to more than 100 feet, enhanced rear cable management using CAT 5 cords, and the ability to work within a multiplatform data center environment to provide improved performance that also simplifies overall infrastructure management.

In the past, managers have typically had to use separate switches for management of a hybrid mix of PS/2 or USB-based systems

in their environments or pay a high premium for switches that could handle both types of equipment, Burlin notes. Competitive products using CAT 5 cable technology are two to four times the price of the Austin Hughes devices ISC offers, Burlin says, allowing businesses that previously felt they



could not afford the CAT 5 technology to now consider an upgrade.

"These switches will work with any computers they have, and if they are involved in a hybrid environment or migrating from one platform to another, this single switch will accept the mix and eliminate the need to purchase and manage multiple switches," Burlin says. "It also allows you to distribute the computers more widely, which can aid in cooling, and still connect them to the same switch. Businesses can do more in the cabinet space they already have without having to look at costly new enclosures."

#### **Gain Control Of Cabling**

The switches reduce the size and number of cables used in a data center by replacing proprietary KVM cables (usually three-forone for PS/2 and two-for-one for USB) with a CAT 5 patch cable, Burlin says. A single CAT 5 KVM switch can handle servers in the same cabinet, in adjacent cabinets, in contiguous rows of cabinets, or even in cabinets that are located in separate rooms up to 130 feet away.

The reduction in cabling can allow IT departments to configure their servers to their best advantage, notes Burlin, improving airflow for better cooling of equipment, enhancing distribution of power requirements, and creating improved distribution of workloads throughout the data center.

Users of the CAT 5 KVM devices can add additional switches in a cascade that allows for the control of up to 128 servers with as few as four 1U switches, Burlin says. The switches in most environments would be placed within the same cabinet, while the servers can be placed at various distances within the data center.

The new switches also provide IT departments with flexibility in management, allowing for control from a local console only, from a console and a remote console up to 500 feet away, or from a local console and from a remote console anywhere in the world that is connected by the Internet, says Burlin.

A user can work securely on the Web using 128-bit secure IP access. This plugand-play capability requires no software to be installed on the servers or remote PCs but provides secure access over IP using a Web browser with server control to the BIOS level of the infrastructure.

#### **More Enhancements Planned**

The switch family also has a roadmap for even greater management capability this year, Burlin says. At present, only one user can be working with the computers at any one time, with as many as eight people observing. Later this year, however, ISC plans to introduce "matrix" versions of the switches that will allow for multiple users at the same time.

The high-density 16- and 32-port switches can use either a PS/2 or USB dongle at the server end of the installation to allow the user to cost-effectively specify the switch to match the exact server configurations and allow older or redundant servers to be migrated over to servers with new USB interfaces without replacing switch hardware.

"These switches really make it easy to upgrade," Burlin notes. "You don't have to do any rewiring; just take the old wire out and attach to the new dongle and slide in the newer server where the old was installed."

The new switches also have an enhanced user interface for administration and user management, such as allowing for "super users" to create custom user profiles and access rights for specific KVM ports. A hotkey can also be configured using different key combinations, and the multilingual interface allows users to select from many different languages.

#### **Product Specifications**

Number of ports: 16 or 32

Connector: RJ-45

**Connectivity:** USB or PS/2 dongle, up to 130 feet

**Expansion:** Up to 256 servers by eight-level cascade

cascade

**Compatibility:** Dell, HP, IBM, Sun Microsystems

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**Support:** Windows 2000/XP/2003/Vista, Linux, Netware, Unix

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## Temperature's Rising . . . Or Not?

#### **Opinions On Thermostat Settings** For Data Centers Are Widely Divergent

by Julie Ritzer Ross

Spurred by rising energy costs, many enterprises have considered raising the baseline temperature, or set point, inside their data centers. While there's no denying that thermostat settings can impact equipment performance, deciding just what a set point should be is hardly a straightforward

"The temperature setting is important to IT equipment performance, which is why manufacturers have temperature ranges specified for their equipment," says consultant Don Beaty, president of DLB

Associates (www.dlbassociates.com) and former chair of the technical committee on mission-critical facilities, technology spaces, and electronic equipment of ASHRAE. "The temperature setting also impacts the performance of the cooling plant. The optimum ranges do not quite mesh, but over a period of several years, IT manufacturers, facilities engineers, and operations personnel worked together to develop a set of thermal guidelines that would allow for both acceptable IT equipment performance and reasonably low energy consumption of the cooling plant."

#### **Air-Side Economizers Offer Cooling Alternative**

Air-side economizers are a viable option for small and medium-sized enterprises that want to save money on cooling their data centers without ruining any equipment, according to a recent study conducted by the Lawrence Berkeley National Laboratory.

Such units, which typically include a sensor and a filter, allow outside air to enter the data center when humidity, temperature, and other conditions reach a predetermined level. Some parties have questioned the idea of using airside economizers based on concern that outside contaminants might land on electronics and cause them to wear out or shut down, and Lawrence Berkley found that compounds called hydroscopic salts may, when extreme

humidity is present, have just that effect. But William Tschudi, a project manager in Lawrence Berkeley's environment energy technologies division and one of the study's authors, said filtration systems in most data centers do just fine in keeping contaminants

"The pollutant of primary concern, when introducing particulate matter to the data center environment, is fine particulate matter that could cause conductor bridging," the report said. Nonetheless, "the results from this study indicate that IT equipment reliability degradation due to outdoor contamination appears to be a poor justification for not using economizers in data centers."

The culmination of this effort, he notes, is an ASHRAE publication titled "Thermal Guidelines for Data Processing Environments," published in 2004.

#### **ASHRAE Guidelines**

Beaty states that based on these guidelines, data centers should be able to operate "in complete safety" at a range of 68 to 77 degrees Fahrenheit. He believes most data center set points do not reach the latter number in part because it is difficult to achieve uniform temperature distribution throughout the facility. Measuring a range of 10 degrees or more between the inlet of one server and another—for example, 68 F at the bottom of a rack and 78 F at the top of a rack—is not unusual, Beaty notes. "If facilities could solve the uniformity problem, they would likely be able to work at the higher distribution temperatures and achieve significant energy savings," he explains.

ASHRAE guidelines also recommend a maximum hourly rate of change for data center temperatures, pegging this point at no more than 9 degrees per hour. "High rates of change, or constant temperature cycling, can result in increased equipment failure rates," Beaty says. Tape drives, in particular, are susceptible to large changes in temperature or relative humidity, he notes.

However, others argue that the higher the set point, the shorter the window of opportunity to address cooling failures. A study by Opengate Data Systems (www.open gatedata.com) found that a typical data center running at 5kW per server cabinet will experience a thermal shutdown within three minutes during a power outage. Higher

density cabinets with 10kW will shut down in less than a minute. "Thermal runaways can wreak havoc on a data center, causing instant data loss," notes a spokesperson for Active Power (www.activepower.com), a manufacturer of UPS flywheel systems.

Meanwhile, Mark Monroe, director of sustainable computing at Sun Microsystems (www.sun.com) says companies can achieve an energy cost savings of 4% for every degree of upward change in a data center's set point. In a recently conducted study of 14 of Sun's data centers, Monroe discovered that eight facilities had the temperature set at 68 F, five at 72 F, and one at 74 F.

"If you're running at 68 degrees, you're running at the bottom level of most of those ranges," he notes. "There's no reason why you can't move to 78. This is a really simple thing to do."

Beaty agrees with Monroe, but not entirely. He claims raising a data center's set point can have a significant effect on energy usage, "but there is no set percentage reduction in energy cost that can be stated based on, say, a 1 degree Fahrenheit rise in temperature." What can be said, he reports, "is that chiller efficiency will increase, and assuming that economizers have been installed, there will be a significant increase in the number of hours per year that the economizers can be used. This increase is specific to the type of economizer (water-side, air-side, or evaporative) and the ambient temperature distribution of each site.

Several companies have introduced products aimed at safely raising set points. Examples of such products include

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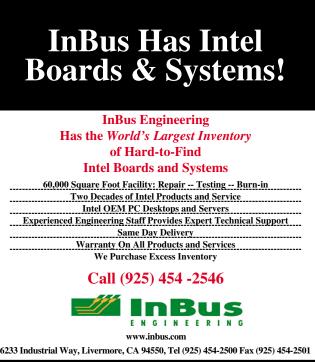
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#### PRODUCTS AT WORK

## Going Green With Sea Sonic

## **Canadian Systems Integrator Turns To Efficient Power Supplies To Create Differentiation**

by Darrell Dunn

BUSINESSES ARE FACED with difficult decisions as they attempt to integrate strategic green initiatives within their organizations and maximize energy efficiency within the IT systems in their infrastructure. A key component of the effort is to ensure that PCs and servers driving a company's IT effort take advantage of the latest in efficient design, and with nearly a quartercentury of experience as a developer and supplier of computer systems, Seanix Technology (www.seanix.com) remains vigilant in looking for the latest technology innovations it can integrate into its products.

As a leading systems integrator based in Richmond, British Columbia, Seanix has designed and manufactured computer systems, motherboards, memory modules, and related products since 1986. But like virtually all original equipment manufacturers, Seanix has shifted most of its manufacturing and end-assembly efforts to specialized electronics contract manufacturers in countries such as China. As a result, Seanix has increased its focus on ensuring its products incorporate the latest in efficient design and are built using the most energy-efficient components available.

"We are always eager to find ways to differentiate ourselves from the general computer assembler," says Mike Ferguson, vice president of sales for Seanix. "In the last couple of years in particular, our customers have seen huge value in our ability to offer energy-efficient computer products, and this effort also fits with our overall corporate culture to help save the planet and operate as a green company."

#### **Creating A Green Culture**

Seanix is an Energy Star partner, and has worked with the government-backed program to provide proven energy management strategies that reduce environmental impact of computers and related equipment and enable end users to reduce overall energy requirements and utility bills. Seanix

designs its systems with Energy Star power management capabilities that can save considerable energy and money when used across the complete IT infrastructure, Ferguson says.

"It is an issue where every little bit counts," he notes. "On a corporate basis, if you've got a few hundred or more systems, you can pretty quickly see the economy of sale that can come from small improvements in power savings, and the greater efficiency generally results in improved longevity for the installations."

#### **80 PLUS Power Supplies**

One of those incremental efficiency improvements can come from the use of power supplies that meet 80 PLUS performance specifications for use in PCs and servers. The 80 PLUS initiative has received more than \$5 million in incentives from participating utilities and energy efficiency organizations in North America in an effort to provide a new level of power efficiency in available power supplies.

Traditionally, PCs have used power supplies with power efficiency of about 60%, meaning the systems lose about 40% of the power generated. The 80 PLUS power supplies provide efficiency of 80% or greater, resulting in systems that lose less than 20% of power generated.

#### **Enter Sea Sonic**

Beginning in 2005, Seanix began evaluating 80 PLUS-specified power supplies and eventually selected devices from Sea Sonic Electronics (www.seasonic.com), a Taiwanese specialist in power supplies since 1975. The final decision included price, breadth of product line, and Sea Sonic's early development of highly reliable 80 PLUS power supplies, Fer`guson

Seanix executives met with Sea Sonic executives in Taiwan to discuss the integration of its power supplies into the Seanix PCs and to get a firsthand look at its manufacturing facilities. Seanix also worked

closely with Sea Sonic's representatives in North America to complete the move to the 80 PLUS power supplies.

"A lot of people say the processor is the heart of your system, but it's really the power supply," Ferguson says. "Everything in the computer, including the processor, has to draw power to drive the system. It's a key element of the whole mix, and you can't afford to cheap out on those components or take a chance on unproven technology. Sea Sonic has been there since day one, really pushing the higher-efficiency standard, and we could see the real passion they had for the effort."

Seanix believed that by focusing on moving its entire PC product line as quickly as possible to 80 PLUS-based power supplies, it could create differentiation and deliver value to customers at little if any additional



cost, Ferguson says. Seanix began integrating Sea Sonic's SS-350ET, SS-350SFE, and SS-300TFX power supplies with active PFC (power factor correction) into its line of PCs and saw quick customer adoption for the high-efficiency systems. In the past two years, Seanix has seen demand for the 80 PLUS-based PCs grow from about 50% of sales to almost 100% today.

"As a leader in the field, they obviously had the experience of providing great reliability with their products, and they also fit the profile of the type of company we were going to be happy being a partner with," Ferguson notes. "We have developed a culture where green is very important to us, and they understood, along with us, that the green PC was an innovation that could make a difference."

#### **Active Power Factor Correction**

A key contributor to the Sea Sonic power supply efficiency is its use of active PFC technology, which is a technique of counteracting the undesirable effects of low power factor. Power supplies with low power factor loads have increased energy loss with a power distribution system, resulting in increased energy use. PFC improves the stability and efficiency of the power supply over the transmission network and helps reduce electricity use.

A regular PC with a 350-watt power supply draws an average of about 80 to 100 watts while operating in idle mode, says

Ferguson, but the Sea Sonic 80 PLUSenabled power supplies can draw as little as 38 watts on idle.

"It's a way we've been able to put in a little innovation into a market where very little innovation is happening," Ferguson says. "We know how the processors are always getting faster, but real innovations that can make a difference in how you do business are very hard to find and exploit. For Seanix, it's now become a key element of everything we are doing to reduce consumption and save the planet."

Seanix now uses 100% recycled material for packaging its systems, including using a biodegradable foam material. It uses natural dye for printing on shipping boxes and non-bleached brown boxes. In some instances where logistics of delivery are feasible, Seanix also offers the option of using no packaging during the delivery process.

Seanix is now working with Sea Sonic to begin integrating 80 PLUS-enabled power supplies into its line of servers. Seanix plans to introduce a broad line of servers using the more efficient power supplies in the spring, Ferguson says.

Offering improved efficiency of its PC line beginning three years ago enabled Seanix to get a jump on its competition, but increasingly, the company is finding that businesses are demanding more efficient systems as a normal course of business, Ferguson notes.

"Being green and saving energy is something more and more businesses of all sizes are caring about," Ferguson says. "Efficiency of systems now shows up on bid submissions more and more frequently as the critical nature of efficiency has become more defined in the past couple of years and the benefits are becoming more clearly understood."

## Sea Sonic Electronics 80 PLUS Power Supplies

Power supplies using active power factor correction provide power delivery at rates of 80% utilization or greater.

"Sea Sonic has been there since day one, really pushing the higher-efficiency standard, and we could see the real passion they had for the effort," says Mike Ferguson, vice president of sales for Seanix (www.seanix.com).

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Seanix integrated Sea Sonic's power supplies into its line of PCs and saw quick customer adoption for the high-efficiency systems.







## Choosing A Web Hosting Company

#### Which One Is Perfect For Your SME?

by Chris A. MacKinnon

So your ENTERPRISE is getting ready to launch a corporate Web site. Or perhaps you are looking to switch hosting companies for some reason. You want to factor in things such as price, space requirements, uptime guarantees, server components, and support. When it comes to choosing a Web hosting company, what are the key issues you need to look for? How do you compare hosting packages? Is it better to find a local host or one with a nationwide presence? What are the advantages between the two? What, exactly, is the best way to go?

#### **Key Issues**

Before you go blindly into the night, Adam Rosenthal, who works in customer support at Web Hosting Logic (www.web hostinglogic.com), says there are a few paramount issues to consider. Rosenthal says, "The key issues to consider include server components that are offered, the company's uptime track record, and, most importantly, the level of support that the Web hosting company offers."

**SME Web Site Must-haves:** 

**Communication Tools** 

Interactivity is becoming a key component of

the Internet. Consumers are attracted to com-

munication features such as pop-up dialogue

boxes and chat channels that allow you to talk

include a registration form; by collecting the

tunity to send out a newsletter or survey.

to them in real time. SME Web sites should also

email addresses of visitors, you have the oppor-

"SMEs should make sure to include many com-

munication features to connect directly with

consumers," says Andreas Gauger, chairman

Andreas Gauger, chairman of the board of 1&1 Internet (www.1and1.com), says that uptime plays a key role when looking at the top issues to consider. He comments, "First of all, small to midsized enterprises should not compromise on having a high level of performance and reliability for their Web site. In order to ensure this, they should select a Web host that offers a 99.99% uptime guarantee so that they can rest assured their Web business is operating reliably." Gauger says other important differentiators are a company's Web hosting package features.

With so many different Web hosting packages available, it can be tough to decide what's right for your SME. But Rosenthal says it's not that hard to find the right choice for your enterprise. He comments, "As most hosting companies seem to offer the world in their hosting packages, I recommend that customers look up reviews on hosting providers, get referrals, and even call the companies to test their level of support and friendliness." Rosenthal says spending your time comparing hosting packages will most likely get you more for less "from just about every company out there." He says if you really want to compare, look for a Web hosting company that does not offer "the world" and then look for the real differences between them and everyone else.

#### of the board at 1&1 Internet (www.1and1.com). "By utilizing these tools, businesses can entice

consumers to return to their Web site."

Consumers have ever-broadening expectations when it comes to Web sites; include live content such as news feeds, weather, route planners, and maps. These will enhance the credibility and functionality of your Web site. Choose a Web host that offers full-article content within your Web site as part of the hosting

Gauger says today's Web hosting packages are very affordable and include very powerful and helpful features. He notes, "Make especially sure to notice the number of included domains offered. If there are no domains included, you have to pay significant amounts to add them. This gets easily overlooked. Also, be conscious of free tools such as a Web site builder, newsletter tool, Web statistics application, or any other productivity features that can help improve your success." Gauger says by considering these elements, you can determine the most valuable Web hosting package for your business.

#### **Does Locale Matter?**

So do you hook up with a Web hosting company in your own neck of the woods or choose a company that appeals to the masses? In Gauger's opinion, bigger is better. He explains, "It is always advisable to choose a large host because they are technically and financially stable and will be serving and protecting Web sites for many years to come."

According to Rosenthal, it depends on the Web presence you want to achieve. He says, "It really does depend on your Web presence. If you're a large company and can afford to have servers all over the country, then I would recommend going with a company that can help support the larger infrastructure. But if you have a smaller Web site, then it really doesn't matter. Chances are, though, that you'll receive better support and service from a local provider."

In Gauger's opinion, a worldwide Web host, such as 1&1, has significant advantages, such as large research and development teams to develop industry-leading products. "This approach helped 1&1 pioneer the one-stop-shop approach to Web hosting and enables us to deliver the latest Web solutions quicker and at more affordable prices than many smaller providers," he notes. "Our technical strength also allows us to develop new Web hosting features that local hosts do not offer. Last but not least, a nationwide presence means the ability to offer excellent connectivity to many providers, which results in faster and more reliable Web sites."

Rosenthal adds, "A nationwide company can offer you servers in multiple locations. This allows a company to build a more

#### The Future **Of Web Hosting**

A look at a large Web host's Web site can reveal just how far Web hosting services have progressed. Web hosts now offer point-andclick solutions for Web design, communication, collaboration, and ecommerce.

"For SMEs, the ever-increasing importance of the Internet now means that hosting their Web site is not just a space for a Web page," says Andreas Gauger, chairman of the board at 1&1 Internet (www.1and1.com). "Today's business hosting packages include an array of free applications for developing and marketing a Web site. These include Web site building, marketing, and communication tools. In the future, Web hosts will continue to develop these appli-

As SMEs demand more sophisticated sites, hosts will need to deliver the technical performance and features to create them. By adding features and applications to packages, Web hosts will play a greater role in the overall expansion of a business. In the future, Web hosts will have to keep up with innovation by advancing their products and services in order to keep apace with growing SMEs.

redundant and fault-tolerant infrastructure. On the other hand, a local provider will only allow you to locate in one area. Depending on the size of your Web presence, this may be just fine. As always, I believe that a local provider will offer better service and support than a nationwide company. With a local provider, the customer is not just another username or number." Rosenthal says there is something to be said for a personal touch when it comes to service.

### **Temperature's Rising . . . Or Not?**

Continued from Page 19 Dynamic Smart Cooling from HP (www.hp .com) and AdaptivCool from Degree Controls (www.degreec.com).

#### **Humidity Levels Warrant Attention**

When addressing the issue of data center thermostat settings, storage administrators should also consider the impact of higher temperatures on data center humidity.

Excess humidity can cause condensation to form on electronic components, leading to wasted cooling and, in turn, a higher energy bill. Insufficient humidity can result in ESD (electrostatic discharges), which can cause equipment to shut down and, quite possibly, sustain damage in the process.

In data center environments, humidity is traditionally measured as "relative." Relative humidity is expressed as a percentage and measures the amount of water in the air at a given temperature compared to the maximum amount of water that air can hold. According to Beaty, an ASHRAE technical committee that focuses on computer rooms recommends that relative humidity be kept in the 40% to 55% range.

Some experts believe keeping humidity at the low end of the range cited by Beaty won't necessarily eliminate ESDs. "You can be fine in your moisture range and still have an ESD event," says Coy Stine, a simulation engineer at Degree Controls.

Beaty advises storage administrators to carefully evaluate the pros and cons of keeping data center humidity levels low. "The lower limit . . . should probably be set based on a total cost of ownership analysis," he says. He believes the best course of action entails weighing the operating cost of humidification against the cost of increased equipment failure due to a lower relative humidity limit.





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## Trickle-down Technologies Grab Security Dollars In 2008

#### SMEs Look Toward Enterprise Solutions Dropping Within Their Budgets

by Sandra Kay Miller

WHEN IT COMES to investing in security technology, SMEs have often looked forlornly at bleeding-edge solutions deployed at the enterprise level. Too expensive, complex to deploy and administer, and not scaled for smaller environments are often cited as stumbling blocks.

However, a 2007 survey conducted by Astaro Internet Security (www.astaro.com), one of the leading providers of UTM (Unified Threat Management) solutions, found that more than 65% of respondents are planning purchases of sophisticated technologies routinely found in larger enterprises' IT infrastructure.

"A huge amount of these customers, especially in SMEs, are very interested in new security technologies—application firewalling, wireless LAN, and vulnerability scanning—that historically have only been available for the enterprise. Network access control and even email and imaging archiving are also high on the list," says Udo Kerst, Astaro's product marketing manager.

Stephen Pao, vice president of product management at Barracuda Networks (888/268-4772; www.barracudanetworks.com), agrees. "I think what's really happening is that we're in one of those life cycles where technology that was previously available

#### Top Five Security Products For SMEs In 2008

According to its 2007 market trend survey, Astaro Internet Security (www.astaro.com) lists the top five technologies on which SMEs will be spending money in 2008.

- 1. Wireless LAN security
- 2. Web application firewalls
- Email archiving technologies, especially those revolving around regulatory compliance
- **4.** Automated vulnerability scanning and penetration testing
- 5. Network access control

to large enterprises is moving down into SMEs."

#### Same Threats

What SMEs and vendors alike are realizing is that threats and regulatory compliance do not discriminate when it comes to the size of a company. Pao explains, "It's an increasingly litigious atmosphere where even small businesses have to worry about things like sexual harassment, so it makes sense to keep people from browsing to Playboy.com or monitoring bandwidth to sites like YouTube in the workplace." Furthermore, SMEs can be affected even more by losing valuable employee time to sites such as MySpace and Facebook. "Employees can waste time whether they are in a small company or big company," notes Pao.

Kerst points out that as Internet threats become more blended, security technologies also need to be flexible and sophisticated to protect against malicious code. In order to respond to emerging threats, security solutions are shifting from reactive to proactive, meaning that organizations are controlling the traffic on their networks through a variety of technologies. Fortunately for SMEs, there are solutions that are very cost-effective as opposed to earlier enterprise-class technologies. "We are seeing Web filtering really moving down market," says Pao.

As security technologies shift from the enterprise to the SME market, Kerst has noticed the emergence of the all-in-one security appliance. "The all-in-one market takes high-end technologies for the enterprise and makes them easier to deploy and administer by integrating into a single solution."

Kerst believes that by integrating more complex security technologies, such as encryption, into a single solution, more SMEs are willing to make purchases despite having limited technical knowledge and staff.

#### **Compliance Driven**

At least one of the hot technologies for 2008—the Web application firewall—is being driven by PCI compliance. According to Pao, the PCI DSS (Payment Card Industry Data Security Standard) version 1.1, a set of comprehensive

requirements for payment account data security developed by the PCI Security Standards Council, calls for regular source code audits or the deployment of a Web application firewall in order to meet regulatory compliance. "I think that people really looked at it and said, 'We pay \$20,000 to \$25,000 for source code reviews, and we've done that,' but the thought of doing that every single time an application is changed is overwhelming," says Pao.

But in reality, changes are constantly being made to applications, meaning that maintaining compliance is also becoming solutions and believe this trend will continue in 2008.

This movement can be directly attributed to changes in the Federal Rules of Civil Procedure, which now accepts email as a valid form of evidence and puts the burden of proof on companies to produce stored copies of their electronic communications. Although the precedent was set in a case where Merrill Lynch was unable to decrypt its email archives, thus the judge imposed the maximum extent of the law due to lack of evidence in its defense, in litigation, the need to produce email records for evidence is no longer based on

## "The all-in-one market takes high-end technologies for the enterprise and makes them easier to deploy and administer by integrating into a single solution."

-Astaro's Udo Kerst

increasingly difficult, especially for SMEs. For those reasons, Pao sees Web application firewall technologies catching the attention of smaller organizations. "There's always been some level of interest in Web application firewalls among the security elite, but I think what PCI DSS did, even for those not bound by compliance, was it put down on paper a best practice that people needed to be thinking about," says Pao.

However, Kerst thinks the application security area is still a very immature market. "Not many SMEs really understand what's behind the Web application firewall, so we were really surprised to see it in the top three of our list of the respondents because we thought it was still a niche technology and market for smaller organizations to acquire this type of protection." As SMEs gain a better awareness of emerging Web threats, such as SQL injections and cross-site scripting, Pao estimates that within the next two years, SMEs will increasingly deploy Web application firewalls.

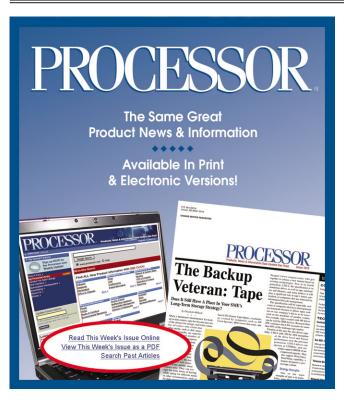
#### **Save It For Later**

While email archival technologies may not sound like a good security investment at first, since 2006, both Pao and Kerst have seen a marked increase in investments for advanced email archival the size of the company. "Email archiving was something only large enterprises needed to do, but we're now seeing that SMEs also need that same technology, or they risk going under," says Pao. Looking even further down the road, Pao and other analysts see future investments extending to solutions that can capture and archive other forms of electronic communications, such as instant messaging and VoIP.

#### **Growing Wireless**

Astaro's survey found that during the next fiscal year, 70% of the respondents plan to increase security spending to prevent unauthorized access to private data and networks. A good portion of that money will be devoted to protecting the rapidly growing wireless and mobile infrastructure.

"Wireless security will continue to grow along with the industry. As technologies are getting more and more sophisticated, like with WiMAX and mobile cellular/Wi-Fi devices, such as smartphones, iPhones, PDAs, etc., these need to be secured," says Kerst, who believes that users are also going to see a rise in threats associated with WLAN and mobile technologies. "Wireless itself is a very strong growth area, and security is a part of that [and] is definitely a huge interest for customers."

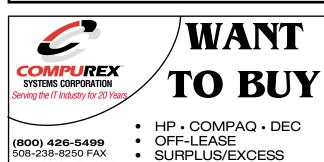


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#### WHAT'S HAPPENING

## **Equalizing Technology**

#### **NetEqualizer Offers A New Approach To Application Shaping**

by Julie Sartain

CURRENT APPLICATION SHAPING products examine the content of Internet packets as they pass through the packet shaper. Using pattern-matching techniques, the packet shaper determines, in real time, the application type of each packet and then proceeds to restrict or allow the data based on a set of rules established by the system administrators.

Administrators can use these programs and define rules to restrict or allow any application that exists, but it takes an incredible amount of effort to keep pace. There is one product, however, that's trying a new approach called equalizing technology. This product is NetEqualizer (800/918-2763; www.netequalizer.com) from a Coloradobased company called APconnections.

#### The Problems

According to Art Reisman, CEO at APconnections, pattern-matching techniques work on most classified packets, but what if the rules are set to restrict all packets containing ASCII characters or words such as Rhapsody, Napster, or bit torrent? One of these packets might contain a company-wide memo explaining the corporate policies regarding the usage of these programs on company computers. Pattern-matching rules would restrict this memo attachment.

In addition, many companies intentionally refuse to classify their communications, so their packets slip past the application-shaping products. Seems like a small issue, unless hundreds of these junk mail packets are slipping through onto thousands of

desktops in your company nationwide on a daily basis. Then it becomes a huge problem, as the bandwidth is usurped to process this unwanted garbage.

Even if an application-shaping product can identify 90% of the spectrum of apps (and that's a lot), notes Reisman, 10% is still unclassified. Your options are to either monitor and manually classify that 10%, which is very time-consuming and costly, or allow those packets to pass without restrictions.

#### **Solutions**

"Our products can, generally, extend the capacity of your Internet from 25 to 50%," says Reisman. "This means you can have that many more people using the Internet without adding more bandwidth."

There is always the potential for a few users to overwhelm the Internet connection, he notes. But when applied to many verticals such as ISPs, libraries, schools, colleges, and businesses with 50 or more employees, the NetEqualizer prevents this from happening.

"NetEqualizer appliances automatically shape traffic based on built-in fairness rules," notes Reisman. "This method allows network administrators/operators to quickly and easily bring network traffic into balance without having to build and manage extensive policy libraries—and all without changes to their existing network infrastructure."

#### **How It Works**

Reisman explains that APconnections looked at how systems keep one process from locking up the whole computer. For

example, Microsoft Windows (www.micro soft.com) does not handle this well; however, Linux and Unix, as well as some of the other server equipment that's available, do. The premise of these products is that no single computer program is allowed to dominate the CPU, so everything that's running gets a turn. "We then applied this tried-and-true methodology to an Internet link," says Reisman. "The result is NetEqualizer."

NetEqualizer uses behavior-based shaping, adds Reisman. It looks at the behavior of abuse on an Internet link and then takes action based on that. When the network is congested, the fairness algorithm favors business-class applications, such as VoIP, Web browsing, chat, and email, at the expense of large file downloads.

#### NETEQUALIZER

The other available products (that is, the competition) try to classify specific varieties of traffic by type. Intuitively, the classification by type is easy for customers to understand, but implementing that process is very time-consuming, and the cost of trying to identify every type of traffic on the Internet is overwhelming and nearly impossible. Net-Equalizer, on the other hand, always gets the bad guys because bad behavior is not a function of application type. And, as an added bonus, customers do not have to relicense the technology every month; it just works.

In addition, says Reisman, all the settings can be changed in real time, with no effect on network service quality. And, Net-Equalizer allows priority to traffic for hosts that are not supposed to be shaped. Also (for organizations that require 100% network uptime), the NetEqualizer architecture

allows customers to build a redundant system by configuring two NetEqualizer products running in parallel.

#### **R&D History**

"We started with no backing money, so we built a simple open-source version of the concept and begged people to try it," says Reisman. The product excelled and then rose to one of the top 100 open-source projects in the world. (That's considered extremely high when most top open-source projects are targeted to the general consumer.) Then, the company commercialized and enhanced it and contracted with a hardware manufacturer to produce it. There are now more than 1 million end users on six continents behind the NetEqualizer equipment.

"We had many setbacks in the early going," says Reisman. "Mostly just trying to get the product stable and keep it running on a reasonably priced piece of hardware."

Most of APconnections' market is customers who desperately need something but don't want to pay \$50,000 to optimize their \$500-a-month Internet trunk. Getting the product stable in heavy use required the company to purchase sophisticated simulation equipment to troubleshoot the last few hard-to-find bugs. (That was more than three years ago.) Since then, APconnections has had reports of its servers in continuous, heavy use for years at a time without rebooting. "We are very proud of that," says Reisman.

#### What's New?

According to Reisman, the company has recently adopted this technology into an AP (access point) and, quite by accident, have solved a common problem called the hidden node issue, which has plagued 802.11 operators for years. There are other options for this problem, but these choices lock customers into proprietary solutions. APconnections' solution is completely compatible with existing 802.11 wireless technologies, so customers can mix and match its AP without replacing everything.

#### THREE QUESTIONS

## Storage Scalability Without Breaking The Bank

## StoreVault Offers Affordable SME-Tailored Data Protection Solutions

by Joseph Pasquini

**STOREVAULT, A NETAPP DIVISION,** focuses on providing customized data storage products to the strategic small and medium-sized enterprise segment.

Thanks to its symbiotic relationship with Network Appliance (www.netapp.com)—a leading industry provider of enterprise-class data management technologies—Store-Vault (408/822-6000; www.storevault.com) is able to offer scalable network storage solutions more appropriately geared toward the unique needs of SMEs.

We recently asked Drew Meyer, Store-Vault's product marketing manager, about the division and the role that NetApp's storage technologies play in the SME arena.

Prior to joining NetApp, Meyer held product management and product and field marketing positions at several leading storage technology providers. Active in the storage user group community, he is also a host of GeekSpeak, a weekly technology radio broadcast on the central California coast.

## ■ What are the biggest IT-related issues facing today's small to midsized enterprise?

"Smaller customers are facing the same challenges as the Fortune 500, but with a

fraction of the resources, expertise, budget, and experience," says Meyer. "That's not to say that our customers are not resourceful—we are constantly surprised—but the realities of implementing a successful disaster recovery plan, moving to a virtualized server environment, planning for exponential growth, and keeping it under budget are very tough. Fundamentally, today's small business IT managers are facing a shift from reactive storage practices to proactive in almost every case."

In the past, storage was typically purchased in conjunction with a server. "If one needed an email server, one bought storage for it at the same time. When that server grew, one bought more storage for that server," Meyer says. He contends that such a reactive mode unfortunately leads to administrators persistently battling storage issues.

According to Meyer, SMEs that proactively develop a strong storage platform can keep their support budgets under control while still maintaining a competitive edge. "Adding storage is done separately from servers. Resizing, reallocating, and managing that storage is simplified because it is all centrally done for all clients, servers, and users when they need it and how they need it," he says.

#### ■ What should *Processor* readers know about your company's products?

"Most importantly, StoreVault products are flexible. No matter what the need is, what the protocol, connection, or timeframe, we can provide capacity," says Meyer. Shops running multiple operating systems and application platforms can instantly

leverage one single StoreVault device. "That's a huge step forward for any environment and especially so for those SMBs that are in flux."

Meyer asserts that there is no other way to access such powerful technologies at price points as reasonable as those offered by StoreVault. "For example, all StoreVault products include the iSCSI protocol as a standard option. Whether you need a SAN now or think you might move to one in the future or don't even know what one is, you have the option to adopt that technology on your schedule without paying anything extra. That lowers costs and increases the value of the money you spend, turning one purchase into multiple solutions."

#### ■ What makes your company unique?

Meyer is proud of how the StoreVault division of NetApp has become a leader in small-business storage products. "It wins an award every other month on average, continues to break new ground with creative end-user customer solutions, and provides enterprise features at a lower price point than any competitor. Backed by an industry leader, with over 60,000 installations worldwide, the StoreVault division is also a trustworthy partner for resellers."

"Other industry giants are slowly realizing this benefit and are creating products in a similar vein, but none have the advantage of NetApp's operating system and features that make real sense for everyday use and deliver that champagne feature set at a beer price," says Meyer.

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